

Amendments to the Claims:

The following listing of claims replaces all prior listings of claims:

Listing of Claims:

Claims 1-7 canceled.

8. (Currently Amended) ~~The method in accordance with claim 7, A computer-~~
implemented method of reducing redundancy within a data model in a database,
wherein the data model is represented by at least one table, the method comprising:
determining a number of distinct values of partial keys in a table, wherein each
partial key represents at least one row in the table;
reordering one or more columns of the table by cardinality of partial keys, wherein
the cardinality of a partial key represents a number of distinct values of the partial key;
determining whether pairs of partial keys are functionally dependent, each of the
pairs comprising a first partial key and a second partial key; and
eliminating one or more columns having functional dependencies from the table;
wherein partial key K(i) comprises a partial key with an index i and a value Kri for a
tuple t(r) in row with index r; wherein the number of distinct values of K(i) comprises
cardinality |K(i)|; wherein determining whether pairs of partial keys are functionally
dependent further comprises defining function F from each partial key to every other
partial key to its right in a reordered table for each row in table T [[:]] and determining a
functional dependency exists when the function $F(Kri) = Kri$ is the same function for
each tuple t(r) in the table for values of index i from 1 to (d - 1) and for values of j from
(i + 1) to d; and wherein determining whether pairs of partial keys are functionally
dependent for each i from 1 to (d - 1) and j from (i + 1) to d comprises:
setting the flag fd to true;
for each tuple t in T, determining whether F(Kri) is defined, wherein F(Kri) is set
equal to Kri upon determining that F(Kri) is not defined;
looping through the tuples t in T; and
generating a report indicating that column i is functionally dependent on column j
if flag fd is true after the looping through the tuples t in T.

Claim 9 canceled.

10. (Currently Amended) ~~The method in accordance with claim 9, A computer-~~
implemented method of reducing redundancy within a data model in a database,
wherein the data model is represented by at least one table, the method comprising:
determining a number of distinct values of partial keys in a table, wherein each
partial key represents at least one row in the table;
reordering one or more columns of the table by cardinality of partial keys, wherein
the cardinality of a partial key represents a number of distinct values of the partial key;
determining whether pairs of partial keys are functionally dependent, each of the
pairs comprising a first partial key and a second partial key;
eliminating one or more columns having functional dependencies from the table; and
placing the one or more eliminated columns into a separate table so that the column
with a highest cardinality is in the leftmost position, and the column with the lowest
cardinality is in the rightmost position;
wherein partial key $K(i)$ comprises a partial key with an index i and a value Kr_i for
a tuple $t(r)$ in row with index r ; wherein the number of distinct values of $K(i)$ comprises
cardinality $|K(i)|$; wherein the tuple t comprises k key figures and d partial keys $K(1)$
to $K(d)$; wherein a table T comprises n tuples and $d+k$ columns; wherein the n tuples
comprise rows; wherein a function $F(x) = y$ comprises a mapping between partial keys x
and y in a same tuple; wherein a flag fd comprises Boolean values of true or false
indicative of whether a value of the function F is defined; wherein determining whether
pairs of partial keys are functionally dependent comprises defining function F from each
partial key to every other partial key to its right in a reordered table for each row in table
 T and determining a functional dependency exists when the function $F(Kr_i) = Kr_j$ is the
same function for each tuple $t(r)$ in the table for values of index i from 1 to $(d - 1)$ and for
values of j from $(i + 1)$ to d ; wherein when a tuple t is in the table T and $F(Kr_i)$ is not equal
to Kr_j , a functional dependency does not exist between columns i and j ; and wherein
determining whether pairs of partial keys are functionally dependent for each i from 1 to
 $(d - 1)$ and j from $(i + 1)$ to d comprises:

setting the flag fd to true;
for each tuple t in T, determining whether F(Kri) is defined, wherein F(Kri) is set equal to Krj upon determining that F(Kri) is not defined;
looping through the tuples t in T; and
generating a report indicating that column i is functionally dependent on column j if flag fd is true after the looping through the tuples t in T.

11. (Previously Presented) The method in accordance with claim 10, wherein determining whether F(Kri) is defined comprises:

upon determining that F(Kri) is defined, determining whether F(Kri) is equal to Krj, wherein determining that F(Kri) is equal to Krj permits looping through the tuples t in T, and wherein determining that F(Kri) is not equal to Krj comprises:

concluding that K(i) is not functionally dependent on K(j);
setting flag fd to false; and
breaking the looping through the tuples t in T.

Claims 12-15 canceled.

16. (Currently Amended) ~~The method in accordance with claim 15~~ A computer-implemented method of reducing redundancy within a data model in a database, wherein the data model is represented by at least one table, the method comprising:

determining a number of distinct values of partial keys in a table, wherein each partial key represents identifies at least one row in the table;

reordering one or more columns of the table by cardinality of partial keys, wherein the cardinality of a partial key represents a number of distinct values of the partial key;

determining whether a first partial key of the partial keys and a second partial key of the pairs of partial keys are functionally dependent, each of the pairs comprising a the first partial key and the second partial key comprising a pair;

eliminating one or more columns having functional dependencies from the table; and

creating an exception list for the pairs of partial keys that are not functionally dependent;

wherein partial key $K(i)$ comprises a partial key with an index i for a tuple t ; wherein the number of distinct values of $K(i)$ comprises cardinality $|K(i)|$; wherein the tuple t comprises k key figures and d partial keys $K(i)$ for i from 1 to d ; wherein a table T comprises n tuples and $(d + k)$ columns; wherein the n tuples comprise rows; wherein a function $F(x) = y$ comprises a mapping between partial keys x and y in a same tuple; wherein the exception list for the pairs of partial keys that are not functionally dependent comprises partial keys pairs that do not fit a functional dependency defined for other tuples in the table; wherein the exception list represents errors in the one or more data models; wherein the determining whether pairs of partial keys are functionally dependent comprises defining function F from each partial key to every other partial key to its right in a reordered table for each row in table T and determining a functional dependency exists for i from 1 to $(d - 1)$ and j from $(i + 1)$ to d ; wherein the function $F(Kri) = Krj$ is the same function for each tuple $t(r)$ in the table; and wherein when for i from 1 to $(d - 1)$ and j from $(i + 1)$ to d the function $F(Kri) = Krj$ is not the same function for each tuple $t(r)$ in the table, there exists one or more mappings from Kri to Krj for different values of r ; and wherein different values of r are related to different tuples $t(r)$, and upon determining multiple mappings, checking whether one or more entries in set $\{Krj\}$ are similar for each $t(r)$.

17. (Previously Presented) The method in accordance with claim 16, wherein a similarity is defined with any one of a similarity function and a data cleansing function.

18. (Previously Presented) The method in accordance with claim 17, wherein if a subset of $\{Krj\}$ is similar, compress the subset to a single value x to compress multiple mappings to a single functional dependency, wherein if a subset of $\{Krj\}$ is not similar, create an exception list for non-similarities, and wherein the creating

an exception list for non-similarities comprises mapping a row number r for tuple $t(r)$ of each dissimilar entry Krj to a corresponding value Kri .

19. (Previously Presented) The method in accordance with claim 18, further comprising rewriting one or more queries against the table to check the exception list before accessing function F , wherein if no entry exists for the current row in that list, use the functional dependency defined by F .

20. (Currently Amended) An article comprising a machine-readable medium storing instructions operable to cause a machine to perform operations comprising:

reducing redundancy within a data model in a database, wherein the data model is represented by at least one table, the reducing redundancy comprising:

determining a number of distinct values of partial keys in a table, wherein each partial key represents identifies at least one row in the table;

reordering one or more columns of the table by cardinality of partial keys, wherein the cardinality of a partial key represents a number of distinct values of the partial key;

determining whether a first partial key of the partial keys and a second partial key of the pairs of partial keys are functionally dependent, each of the pairs comprising a the first partial key and the second partial key comprising a pair; [[and]]

eliminating one or more columns having functional dependencies from the table; and

placing the one or more eliminated columns into a separate table so that the column with a highest cardinality is in the leftmost position, and the column with the lowest cardinality is in the rightmost position;

wherein partial key $K(i)$ comprises a partial key with an index i and a value Kri for a tuple $t(r)$ in row with index r ; wherein the number of distinct values of $K(i)$ comprises cardinality $|K(i)|$; wherein the tuple t comprises k key figures and d partial keys $K(1)$ to $K(d)$; wherein a table T comprises n tuples and $d+k$ columns; wherein the n tuples comprise rows; wherein a function $F(x) = y$ comprises a mapping between partial keys x

and y in a same tuple; wherein a flag fd comprises Boolean values of true or false indicative of whether a value of the function F is defined; wherein determining whether pairs of partial keys are functionally dependent further comprises defining function F from each partial key to every other partial key to its right in a reordered table for each row in table T and determining a functional dependency exists when the function $F(Kr_i) = Kr_j$ is the same function for each tuple $t(r)$ in the table for values of index i from 1 to $(d - 1)$ and for values of j from $(i + 1)$ to d; wherein when a tuple t is in the table T and $F(Kr_i)$ is not equal to Kr_j , a functional dependency does not exist between columns i and j; and wherein determining whether pairs of partial keys are functionally dependent for each i from 1 to $(d - 1)$ and j from $(i + 1)$ to d comprises:

setting the flag fd to true;

for each tuple t in T, determining whether $F(Kr_i)$ is defined, wherein $F(Kr_i)$ is set equal to Kr_j upon determining that $F(Kr_i)$ is not defined;

looping through the tuples t in T; and

generating a report indicating that column i is functionally dependent on column j if flag fd is true after the looping through the tuples t in T.